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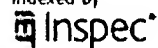
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1 [Verifying, validating and monitoring the open Ravenscar real time kernel](#)



R. Mala, F. Moreira, R. Barbosa, D. Costa, Kjeld Hjortaes, Patricia Rodriguez, Luis Miguel Pinho

 September 2003 **ACM SIGAda Ada Letters , Proceedings of the 12th international workshop on Real-time Ada IRTAW '03**, Volume XXIII Issue 4

Publisher: ACM Press

 Full text available: [pdf\(728.75 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

Business and mission critical real-time systems need to be fully predictable, in order that their behavior is known before deployment, even in the presence of faults. The Open Ravenscar Real Time Kernel (ORK) is a small size with reduced complexity kernel designed to be used in this type of applications. This kernel was implemented to be fully compliant with the Ravenscar profile, which defines a subset of the tasking features of Ada which can be used to implement a small and reliable kernel. Cr ...

2 [Applications & security policy: A novel approach for a file-system integrity monitor tool of Xen virtual machine](#)



Nguyen Anh Quynh, Yoshiyasu Takefuji

 March 2007 **Proceedings of the 2nd ACM symposium on Information, computer and communications security ASIACCS '07**

Publisher: ACM Press

 Full text available: [pdf\(253.86 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

File-system integrity tools (FIT) are commonly deployed host-based intrusion detections (HIDS) tool to detect unauthorized file-system changes. While FIT are widely used, this kind of HIDS has many drawbacks: the intrusion detection is not done in real-time manner, which might render the whole scheme useless if the attacker can somehow take over the system with privileged access in the time between. The administrator also has a lot of problems to keep the base-line database updating. Besides, th ...

Keywords: Linux, Xen virtual machine, intrusion detection, rootkit

3 [Synchronization, QoS and monitoring in games: Modifying first person shooter games to perform real time network monitoring and control tasks](#)



Warren Harrop, Grenville Armitage

 October 2006 **Proceedings of 5th ACM SIGCOMM workshop on Network and system support for games NetGames '06**

Publisher: ACM Press

Full text available:  pdf(221.05 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper describes how a first person shooter (FPS) game engine can be leveraged for monitoring and control of enterprise IP data networks. Network administration can then occur in the following manner: network events (such as port scans or packets hitting a darknet) are translated in real time to various changes in the 3D game world state. Network administrators, logged in as 'players', can then collaboratively detect anomalous network events using the visual and aural cues given by the ga ...

Keywords: 3D, NIDS, game modification, greynet, intrusion detection, network control, network monitoring, real-time, visualization

4 The flight recorder: an architectural aid for system monitoring



Michael M. Gorlick

December 1991 **ACM SIGPLAN Notices , Proceedings of the 1991 ACM/ONR workshop on Parallel and distributed debugging PADD '91**, Volume 26 Issue 12

Publisher: ACM Press

Full text available:  pdf(944.95 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

5 Secure Embedded Processing through Hardware-Assisted Run-Time Monitoring

Divya Arora, Srivaths Ravi, Anand Raghunathan, Niraj K. Jha

March 2005 **Proceedings of the conference on Design, Automation and Test in Europe - Volume 1 DATE '05**

Publisher: IEEE Computer Society

Full text available:  pdf(222.67 KB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

Security is emerging as an important concern in embedded system design. The security of embedded systems is often compromised due to vulnerabilities in "trusted" software that they execute. Security attacks exploit these vulnerabilities to trigger unintended program behavior, such as the leakage of sensitive data or the execution of malicious code. In this work, we present a hardware-assisted paradigm to enhance embedded system security by detecting and preventing unintended program behavior. Sp ...

6 Security and eliability: Using VMM-based sensors to monitor honeypots



Kurniadi Asrigo, Lionel Litty, David Lie

June 2006 **Proceedings of the second international conference on Virtual execution environments VEE '06**

Publisher: ACM Press

Full text available:  pdf(232.05 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Virtual Machine Monitors (VMMs) are a common tool for implementing honeypots. In this paper we examine the implementation of a VMM-based intrusion detection and monitoring system for collecting information about attacks on honeypots. We document and evaluate three designs we have implemented on two open-source virtualization platforms: User-Mode Linux and Xen. Our results show that our designs give the monitor good visibility into the system and thus, a small number of monitoring sensors can det ...

Keywords: IDS, honeypot monitoring, intrusion detection, virtual machine monitor

7 SafetyChip: a time monitoring and policing device



Gustaf Naeser, Lars Asplund, Johan Furunäs

November 2005 **ACM SIGAda Ada Letters , Proceedings of the 2005 annual ACM**

SIGAda international conference on Ada: The Engineering of Correct and Reliable Software for Real-Time & Distributed Systems using Ada and Related Technologies SigAda '05, Volume XXV Issue 4

Publisher: ACM Press

Full text available:  pdf(315.77 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The SafetyChip proposes a strategy where parts of the effort invested in the formal verification during the development of a system can be reused during the system's operation. The strength in a formal verification of a system is that a system can mathematically be proven to fulfil certain requirements, e.g., timing requirements. The SafetyChip uses information from verification to monitor and police a system during run-time. The monitoring is done by surveillance of the applications communicati ...

Keywords: FPGA, hardware monitoring, kernel

8 Special issue: AI in engineering



D. Sriram, R. Joobbani

April 1985 **ACM SIGART Bulletin**, Issue 92

Publisher: ACM Press

Full text available:  pdf(8.79 MB) Additional Information: [full citation](#), [abstract](#)

The papers in this special issue were compiled from responses to the announcement in the July 1984 issue of the SIGART newsletter and notices posted over the ARPAnet. The interest being shown in this area is reflected in the sixty papers received from over six countries. About half the papers were received over the computer network.

9 A model of real time control system production



M. N. Matelan

June 1976 **ACM SIGDA Newsletter**, Volume 6 Issue 2

Publisher: ACM Press

Full text available:  pdf(1.75 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

Many facets of Computer Science and associated technologies may be profitably viewed as dedicated real time control activities. Production of systems to exercise such control has been difficult and costly. An abstract model of the process of producing these systems is presented. The model indicates three areas of the design problem amenable to automation: 1) the selection and configuration of hardware; 2) the production of software; and 3) the selection of a monitor to maintain real time integri ...

10 Dynamic adaptation of real-time software



Thomas E. Bihari, Karsten Schwan

May 1991 **ACM Transactions on Computer Systems (TOCS)**, Volume 9 Issue 2

Publisher: ACM Press

Full text available:  pdf(2.04 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

In large, dynamic, real-time computer systems, it is frequently most cost effective to employ different software performance and reliability techniques at different levels of granularity, at different times, or within different subsystems. These techniques may include regulation of redundancy and resource allocation, multiversion and multipath execution, adjustments of program attributes such as time-out periods and others. The management of software in such systems is a difficu ...

Keywords: adaptability, dynamic software architectures, real-time systems, software engineering

11 Terra: a virtual machine-based platform for trusted computing

Tal Garfinkel, Ben Pfaff, Jim Chow, Mendel Rosenblum, Dan Boneh

October 2003 **ACM SIGOPS Operating Systems Review , Proceedings of the nineteenth ACM symposium on Operating systems principles SOSP '03**, Volume 37 Issue 5**Publisher:** ACM Press

Full text available: pdf(140.31 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We present a flexible architecture for trusted computing, called Terra, that allows applications with a wide range of security requirements to run simultaneously on commodity hardware. Applications on Terra enjoy the semantics of running on a separate, dedicated, tamper-resistant hardware platform, while retaining the ability to run side-by-side with normal applications on a general-purpose computing platform. Terra achieves this synthesis by use of a *trusted virtual machine monitor* (TVMM ...

Keywords: VMM, attestation, authentication, trusted computing, virtual machine, virtual machine monitor

12 Cryptography and data security

Dorothy Elizabeth Robling Denning

January 1982 Book

Publisher: Addison-Wesley Longman Publishing Co., Inc.

Full text available: pdf(19.47 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)**From the Preface (See Front Matter for full Preface)**

Electronic computers have evolved from exiguous experimental enterprises in the 1940s to prolific practical data processing systems in the 1980s. As we have come to rely on these systems to process and store data, we have also come to wonder about their ability to protect valuable data.

Data security is the science and study of methods of protecting data in computer and communication systems from unauthorized disclosure ...

13 A relational approach to monitoring complex systems

Richard Snodgrass

May 1988 **ACM Transactions on Computer Systems (TOCS)**, Volume 6 Issue 2**Publisher:** ACM Press

Full text available: pdf(3.42 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Monitoring is an essential part of many program development tools, and plays a central role in debugging, optimization, status reporting, and reconfiguration. Traditional monitoring techniques are inadequate when monitoring complex systems such as multiprocessors or distributed systems. A new approach is described in which a historical database forms the conceptual basis for the information processed by the monitor. This approach permits advances in specifying the low-level data collection, ...

14 Efficient, Unified, and Scalable Performance Monitoring for Multiprocessor Operating Systems

Robert W. Wisniewski, Bryan Rosenberg

November 2003 **Proceedings of the 2003 ACM/IEEE conference on Supercomputing SC**

'03


Publisher: IEEE Computer SocietyFull text available:  pdf(250.19 KB) Additional Information: [full citation](#), [abstract](#), [citations](#)

Programming, understanding, and tuning the performance of large multiprocessor systems is challenging. Experts have difficulty achieving good utilization for applications on large machines. The task of implementing a scalable system such as an operating system or database on large machines is even more challenging. And the importance of achieving good performance on multiprocessor machines is increasing as the number of cores per chip increases and as the size of multiprocessors increases. Cruci ...

15 The architecture of concurrent programs

Per Brinch Hansen

January 1977 Book

Publisher: Prentice-Hall, Inc.Full text available:  pdf(10.71 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


From the Preface

CONCURRENT PROGRAMMING

This book describes a method for writing concurrent computer programs of high quality. It is written for professional programmers and students who are faced with the complicated task of building reliable computer operating systems or real-time control programs.

The motivations for mastering concurrent programming are both economic and intellectual. Concurrent programming makes it possible to use a compu ...


16 Computer security: Towards a tamper-resistant kernel rootkit detector

 Nguyen Anh Quynh, Yoshiyasu TakefujiMarch 2007 **Proceedings of the 2007 ACM symposium on Applied computing SAC '07****Publisher:** ACM PressFull text available:  pdf(177.12 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A variety of tools and architectures have been developed to detect security violations to Operating System kernels. However, they all have fundamental flaw in the design so that they fail to discover kernel-level attack. Few hardware solutions have been proposed to address the outstanding problem, but unfortunately they are not widely accepted. This paper presents a software-based method to detect intrusion to kernel. The proposed tool named *XenKIMONO*, which is based on Xen Virtual Mac ...

Keywords: Linux, Xen virtual machine, intrusion detection, kernel rootkit

17 Real-time convergence of Ada and Java™

 Ben Brosgol, Brian DobbingSeptember 2001 **ACM SIGAda Ada Letters , Proceedings of the 2001 annual ACM SIGAda international conference on Ada SIGAda '01**, Volume XXI Issue 4**Publisher:** ACM PressFull text available:  pdf(191.98 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Two independent recent efforts have defined extensions to the Java platform that intend to satisfy real-time requirements. This paper summarizes the major features of these efforts, compares them to each other and to Ada 95's Real-Time Annex, and argues that their convergence with Ada95 may serve to complement rather than compete with Ada in

the real-time domain.

Keywords: Ada, Java, Real-Time, asynchrony, garbage collection, scheduling, threads

18 The current state of the RTSJ: Distributed real-time specification for Java: a status report (digest)



Jonathan S. Anderson, E. Douglas Jensen

October 2006 **Proceedings of the 4th international workshop on Java technologies for real-time and embedded systems JTRES '06**

Publisher: ACM Press

Full text available: pdf(398.73 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The Distributed Real-Time Specification for Java (DRTSJ) is under development within Sun's Java Community Process (JCP) as Java Specification Request 50 (JSR-50), lead by the MITRE Corporation. We present the engineering considerations and design decisions settled by the Expert Group, the current and proposed form of the Reference Implementation, and a summary of open issues. In particular, we present an approach to integrating the distributable threads programming model with the Real-Time Speci ...

Keywords: distributable thread, distributed, distributed scheduling, java, real-time, thread integrity

19 Real-time protocol analysis for detecting link-state routing protocol attacks



Ho-Yen Chang, S. Felix Wu, Y. Frank Jou

February 2001 **ACM Transactions on Information and System Security (TISSEC)**, Volume 4 Issue 1

Publisher: ACM Press

Full text available: pdf(252.10 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A real-time knowledge-based network intrusion-detection model for a link-state routing protocol is presented for the OSPF protocol. This model includes three layers: a data process layer to parse packets and dispatch data; and event abstractor to abstract predefined real-time events for the link-state routing protocol; and an extended timed finite state machine to express the real-time behavior of the protocol engine and to ...

Keywords: OSPF attacks, event correlation, knowledge-based IDS, link-state routing protocol security, real-time misuse intrusion detection, real-time network protocol analysis, timed finite state machine

20 Scalability, performance, and real-time: Friendly virtual machines: leveraging a feedback-control model for application adaptation



Yuting Zhang, Azer Bestavros, Mina Guirguis, Ibrahim Matta, Richard West

June 2005 **Proceedings of the 1st ACM/USENIX international conference on Virtual execution environments VEE '05**

Publisher: ACM Press

Full text available: pdf(317.34 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

With the increased use of "Virtual Machines" (VMs) as vehicles that isolate applications running on the same host, it is necessary to devise techniques that enable multiple VMs to share underlying resources both fairly and efficiently. To that end, one common approach is to deploy complex resource management techniques in the hosting infrastructure. Alternately, in this paper, we advocate the use of self-adaptation in the VMs themselves based on feedback about resource usage and availability. Co ...

Keywords: feedback Control, friendly virtual machines, resource management

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